

SUMMARY

In the Final Office Action, claims 1-3, 5-14, and 16-27 were rejected. Applicants respectfully traverse the Examiner's rejections and request reconsideration of the application in light of the following amendments.

Rejections under 35 U.S.C. §102

Claims 1-3, 6, 7, 9-11, 13, 14, 17, 18 and 22-27 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Aigner, et al Pub. No. 2002/0140148A1 ("Aigner").

Rejections under 35 U.S.C. §103

Claims 5 and 16 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Aigner in view of Gleason, et al U.S. Patent No. 6,390,904 ("Gleason").

Claims 8 and 20 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Aigner in view of Aigner, and Aigner in view of Sinclair et al U.S. Patent No. 6,494,769 ("Sinclair").

Claims 12, 19, 21 and 23-27 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Aigner in view of Zuniga, et al U.S. Patent No. 6,210,255 ("Zuniga").

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

Claim 1 (Currently amended) A substrate retainer, comprising:

a plurality of retainer bodies, configured to removably engage a substrate having a back side, wherein each retainer body engages a corresponding inner portion of the back side and the plurality of retainer bodies collectively engage less than the entire back side; and

a flexure coupled to one of the retainer bodies, ~~configured to restrict one or more degrees of movement of the substrate with respect to the substrate retainer wherein the~~ flexure is configured to resist in-plane lateral movement and allow out-of-plane movement.

Claim 2 (Previously presented) The substrate retainer of Claim 1, wherein one of the retainer bodies removably engages the back side of the substrate through vacuum control.

Claim 3 (Previously presented) The substrate retainer of Claim 2, wherein one of the retainer bodies includes a contact surface, and an aperture extending through a portion of the contact surface to allow activation and deactivation of a vacuum.

Claim 4 (Withdrawn) The substrate retainer of Claim 1, wherein the retainer body removably engages the portion of the back side of the substrate through a coupling method selected from electrostatic force, VanderWaals force, magnetic forces and capillary attraction.

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Claim 5 (Previously presented) The substrate retainer of Claim 1, wherein one of the retainer bodies includes a contact surface to mate with the back side of the substrate, and the contact surface is faced with a wear-resistant material.

Claim 6 (Canceled)

Claim 7 (Currently amended) The substrate retainer of ~~Claim 6~~ Claim 1 wherein the in-plane lateral movement restricted by the flexure is movement in at least a selected one of a X, a Y and a θ direction, and the out-of-plane movement allowed by the flexure includes a Z direction.

Claim 8 (original) The substrate retainer of Claim 1, wherein the flexure material is a selected one of steel, aluminum, glass, quartz, synthetic diamond, and sapphire.

Claim 9 (Previously presented) The substrate retainer of Claim 1, further comprising an actuator configured to controllably urge the flexure and the retainer body in an upward direction to facilitate chucking and dechucking of the substrate.

Claim 10 (Previously presented) The substrate retainer of Claim 9, wherein the actuator controls the coupling of the retainer body to the back side of the substrate.

Claim 11 (Currently amended) A substrate confinement apparatus, comprising:
a global confinement system that causes a substrate to substantially remain in one plane; and

one or more substrate retainers, at least one of which including:

a plurality of retainer bodies, configured to removably engage a substrate having a back side, wherein each retainer body engages a corresponding inner portion of the back side and the plurality of retainer bodies collectively engage less than the entire back side; and

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a flexure coupled to one of the retainer bodies ~~and configured to restrict one or more degrees of movement of the substrate with respect to the substrate retainer, wherein the flexure is configured to resist in-plane lateral movement and allow out-of-plane movement.~~

Claim 12 (original) The substrate confinement apparatus of Claim 11, wherein three or more substrate retainers are used and equilaterally spaced from each other.

Claim 13 (Previously presented) The substrate confinement apparatus of Claim 11, wherein one of the retainer bodies removably engages the back side of the substrate through vacuum control.

Claim 14 (Previously presented) The substrate confinement apparatus of Claim 11, wherein one of the retainer bodies includes a contact surface, and an aperture extending through a portion of the contact surface to allow activation and deactivation of a vacuum.

Claim 15 (Withdrawn) The substrate confinement apparatus of Claim 11, wherein the retainer body removably engages the portion of the back side of substrate through a coupling method selected from electrostatic force, VanderWaals force, magnetic forces and capillary attraction.

Claim 16 (Previously presented) The substrate confinement apparatus of Claim 11, wherein one of the retainer bodies includes a contact surface to engage the back side of the substrate, and the contact surface is faced with a wear-resistant material.

Claim 17 (Canceled)

Claim 18 (Currently amended) The substrate confinement apparatus of ~~Claim 17~~Claim 11 wherein the in-plane lateral movement restricted by the flexure is movement in at

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least a selected one of a X, a Y and a θ direction, and the out-of-plane movement allowed by the flexure is a Z direction.

Claim 19 (Currently amended) The substrate confinement apparatus of ~~Claim 17~~Claim 11, wherein the global confinement apparatus maintains the substrate generally in one plane and the one of the substrate retainers allows for independent local out-of-plane movement of the substrate.

Claim 20 (original) The substrate confinement apparatus of Claim 11, wherein the flexure material is a selected one of steel, aluminum, glass, quartz, synthetic diamond, and sapphire.

Claim 21 (Previously presented) The substrate confinement apparatus of Claim 11, further comprising an actuator configured to controllably urge one of the substrate retainers in an upward direction to facilitate loading and unloading of the substrate.

Claim 22 (Previously presented) The substrate confinement apparatus of Claim 11, wherein the global confinement system includes a plurality of vacuum ports and air jets, and a pressure control to maintain the substrate in substantially one plane.

Claim 23 (Currently amended) A substrate confinement method, comprising:
 providing a substrate having process side and a back side;
 providing a substrate confinement apparatus having one or more substrate retainers, at least one of the substrate retainers including a plurality of retainer bodies configured to removably engage a substrate having a back side, wherein each retainer body engages a corresponding inner portion of the back side and the plurality of retainer bodies collectively engage less than the entire back side, and a flexure coupled to one of the retainer bodies and ~~configured to restrict one or more degrees of movement of the substrate with respect to the substrate retainer, wherein the flexure is configured to resist in-plane lateral movement and allow out-of-plane movement;~~

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positioning the substrate in the substrate confinement apparatus;
urging one of the substrate retainers toward the back side of the substrate; and
coupling a contact surface of one of the retainer bodies to the back side of the
substrate; and
activating a global confinement system.

Claim 24 (Previously presented) The substrate confinement method of Claim 23,
further comprising:

processing the substrate; and
decoupling the substrate retainer from the back side of the substrate.

Claim 25 (Previously presented) The substrate confinement method of Claim 23,
wherein urging one of the substrate retainers toward the back side of the substrate
includes providing an actuator and raising the actuator to engage the flexure.

Claim 26 (Previously presented) The substrate confinement method of Claim 23,
wherein coupling the contact surface of one of the retainer bodies to the back side of
the substrate includes supplying a vacuum to the retainer body.

Claim 27 (Previously presented) The substrate confinement method of Claim 25,
further comprising:

removing the actuator from the flexure.

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